

107TH CONGRESS
2D SESSION

H. R. 5714

To authorize appropriations for fiscal years 2003, 2004, and 2005 for the National Science Foundation, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

NOVEMBER 13, 2002

Mr. SMITH of Michigan (for himself, Ms. EDDIE BERNICE JOHNSON of Texas, Mr. BOEHLERT, Mr. HALL of Texas, Mr. SMITH of Texas, Mrs. MORELLA, Mr. HONDA, Mr. EHLERS, Mr. BAIRD, Mr. ETHERIDGE, Mrs. BIGGERT, Mr. BARCIA, Mr. GILCHREST, Mr. BACA, Mr. CALVERT, Mr. UDALL of Colorado, and Ms. LOFGREN) introduced the following bill; which was referred to the Committee on Science

A BILL

To authorize appropriations for fiscal years 2003, 2004, and 2005 for the National Science Foundation, and for other purposes.

1 *Be it enacted by the Senate and House of Representa-*
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE.**

4 This Act may be cited as the “National Science
5 Foundation Authorization Act of 2002”.

6 **SEC. 2. FINDINGS.**

7 Congress finds the following:

1 (1) The National Science Foundation has made
2 major contributions for more than 50 years to
3 strengthen and sustain the Nation's academic re-
4 search enterprise that is the envy of the world.

5 (2) The economic strength and national security
6 of the United States and the quality of life of all
7 Americans are grounded in the Nation's scientific
8 and technological capabilities.

9 (3) The National Science Foundation carries
10 out important functions in supporting basic research
11 in all science and engineering disciplines and in sup-
12 porting science, mathematics, engineering, and tech-
13 nology education at all levels.

14 (4) The research and education activities of the
15 National Science Foundation promote the discovery,
16 integration, dissemination, and application of new
17 knowledge in service to society and prepare future
18 generations of scientists, mathematicians, and engi-
19 neers who will be necessary to ensure America's
20 leadership in the global marketplace.

21 (5) The National Science Foundation must be
22 provided with sufficient resources to enable it to
23 carry out its responsibilities to develop intellectual
24 capital, strengthen the scientific infrastructure, inte-
25 grate research and education, enhance the delivery

1 of mathematics and science education in the United
2 States, and improve the technological literacy of all
3 people in the United States.

4 (6) The emerging global economic, scientific,
5 and technical environment challenges long-standing
6 assumptions about domestic and international policy,
7 requiring the National Science Foundation to play a
8 more proactive role in sustaining the competitive ad-
9 vantage of the United States through superior re-
10 search capabilities.

11 (7) Commercial application of the results of
12 Federal investment in basic and computing science
13 is consistent with longstanding United States tech-
14 nology transfer policy and is a critical national pri-
15 ority, particularly with regard to cybersecurity and
16 other homeland security applications, because of the
17 urgent needs of commercial, academic, and indi-
18 vidual users as well as the Federal and State Gov-
19 ernments.

20 **SEC. 3. POLICY OBJECTIVES.**

21 In allocating resources made available under section
22 5, the Foundation shall have the following policy objec-
23 tives:

24 (1) To strengthen the Nation's lead in science
25 and technology by—

1 (A) increasing the national investment in
2 general scientific research and increasing in-
3 vestment in strategic areas;

4 (B) balancing the Nation's research port-
5 folio among the life sciences, mathematics, the
6 physical sciences, computer and information
7 science, geoscience, engineering, and social, be-
8 havioral, and economic sciences, all of which are
9 important for the continued development of en-
10 abling technologies necessary for sustained
11 international competitiveness;

12 (C) expanding the pool of scientists and
13 engineers in the United States;

14 (D) modernizing the Nation's research in-
15 frastructure; and

16 (E) establishing and maintaining coopera-
17 tive international relationships with premier re-
18 search institutions, with the goal of such rela-
19 tionships being the exchange of personnel, data,
20 and information in an effort to alleviate prob-
21 lems common to the global community.

22 (2) To increase overall workforce skills by—

23 (A) improving the quality of mathematics
24 and science education, particularly in kinder-
25 garten through grade 12;

1 (B) promoting access to information tech-
2 nology for all students;

3 (C) raising postsecondary enrollment rates
4 in science, mathematics, engineering, and tech-
5 nology disciplines for individuals identified in
6 section 33 or 34 of the Science and Engineering
7 Equal Opportunities Act (42 U.S.C. 1885a or
8 1885b);

9 (D) increasing access to higher education
10 in science, mathematics, engineering, and tech-
11 nology fields for students from low-income
12 households; and

13 (E) expanding science, mathematics, engi-
14 neering, and technology training opportunities
15 at institutions of higher education.

16 (3) To strengthen innovation by expanding the
17 focus of competitiveness and innovation policy at the
18 regional and local level.

19 **SEC. 4. DEFINITIONS.**

20 In this Act:

21 (1) **ACADEMIC UNIT.**—The term “academic
22 unit” means a department, division, institute, school,
23 college, or other subcomponent of an institution of
24 higher education.

1 (2) BOARD.—The term “Board” means the Na-
2 tional Science Board established under section 2 of
3 the National Science Foundation Act of 1950 (42
4 U.S.C. 1861).

5 (3) COMMUNITY COLLEGE.—The term
6 “community college” has the meaning given such
7 term in section 3301(3) of the Elementary and Sec-
8 ondary Education Act of 1965 (20 U.S.C. 7011(3)).

9 (4) DIRECTOR.—The term “Director” means
10 the Director of the National Science Foundation es-
11 tablished under section 2 of the National Science
12 Foundation Act of 1950 (42 U.S.C. 1861).

13 (5) ELEMENTARY SCHOOL.—The term
14 “elementary school” has the meaning given that
15 term by section 9101(18) of the Elementary and
16 Secondary Education Act of 1965 (20 U.S.C.
17 7801(18)).

18 (6) ELIGIBLE NONPROFIT ORGANIZATION.—The
19 term “eligible nonprofit organization” means a non-
20 profit research institute, or a nonprofit professional
21 association, with demonstrated experience and effec-
22 tiveness in mathematics or science education as de-
23 termined by the Director.

24 (7) FOUNDATION.—The term “Foundation”
25 means the National Science Foundation established

1 under section 2 of the National Science Foundation
2 Act of 1950 (42 U.S.C. 1861).

3 (8) HIGH-NEED LOCAL EDUCATIONAL AGEN-
4 CY.—The term “high-need local educational agency”
5 means a local educational agency that meets one or
6 more of the following criteria:

7 (A) It has at least one school in which 50
8 percent or more of the enrolled students are eli-
9 gible for participation in the free and reduced
10 price lunch program established by the Richard
11 B. Russell National School Lunch Act (42
12 U.S.C. 1751 et seq.).

13 (B) It has at least one school in which—

14 (i) more than 34 percent of the aca-
15 demic classroom teachers at the secondary
16 level (across all academic subjects) do not
17 have an undergraduate degree with a
18 major or minor in, or a graduate degree in,
19 the academic field in which they teach the
20 largest percentage of their classes; or

21 (ii) more than 34 percent of the
22 teachers in two of the academic depart-
23 ments do not have an undergraduate de-
24 gree with a major or minor in, or a grad-
25 uate degree in, the academic field in which

1 they teach the largest percentage of their
2 classes.

3 (C) It has at least one school whose teach-
4 er attrition rate has been 15 percent or more
5 over the last three school years.

6 (9) INSTITUTION OF HIGHER EDUCATION.—The
7 term “institution of higher education” has the
8 meaning given such term in section 101(a) of the
9 Higher Education Act of 1965 (20 U.S.C. 1001(a)).

10 (10) LOCAL EDUCATIONAL AGENCY.—The term
11 “local educational agency” has the meaning given
12 such term by section 9101(26) of the Elementary
13 and Secondary Education Act of 1965 (20 U.S.C.
14 7801(26)).

15 (11) MASTER TEACHER.—The term “master
16 teacher” means a mathematics or science teacher
17 who works to improve the instruction of mathe-
18 matics or science in kindergarten through grade 12
19 through—

20 (A) participating in the development or re-
21 vision of science, mathematics, engineering, or
22 technology curricula;

23 (B) serving as a mentor to mathematics or
24 science teachers;

1 (C) coordinating and assisting teachers in
2 the use of hands-on inquiry materials, equip-
3 ment, and supplies, and when appropriate, su-
4 pervising acquisition and repair of such mate-
5 rials;

6 (D) providing in-classroom teaching assist-
7 ance to mathematics or science teachers; and

8 (E) providing professional development, in-
9 cluding for the purposes of training other mas-
10 ter teachers, to mathematics and science teach-
11 ers.

12 (12) NATIONAL RESEARCH FACILITY.—The
13 term “national research facility” means a research
14 facility funded by the Foundation which is available,
15 subject to appropriate policies allocating access, for
16 use by all scientists and engineers affiliated with re-
17 search institutions located in the United States.

18 (13) SECONDARY SCHOOL.—The term
19 “secondary school” has the meaning given that term
20 by section 9101(38) of the Elementary and Sec-
21 ondary Education Act of 1965 (20 U.S.C.
22 7801(38)).

23 (14) STATE.—Except with respect to the Ex-
24 perimental Program to Stimulate Competitive Re-
25 search, the term “State” means one of the several

1 States, the District of Columbia, the Commonwealth
2 of Puerto Rico, the Virgin Islands, Guam, American
3 Samoa, the Commonwealth of the Northern Mariana
4 Islands, or any other territory or possession of the
5 United States.

6 (15) STATE EDUCATIONAL AGENCY.—The term
7 “State educational agency” has the meaning given
8 such term by section 9101(41) of the Elementary
9 and Secondary Education Act of 1965 (20 U.S.C.
10 7801(41)).

11 (16) UNITED STATES.—The term “United
12 States” means the several States, the District of Co-
13 lumbia, the Commonwealth of Puerto Rico, the Vir-
14 gin Islands, Guam, American Samoa, the Common-
15 wealth of the Northern Mariana Islands, and any
16 other territory or possession of the United States.

17 **SEC. 5. AUTHORIZATION OF APPROPRIATIONS.**

18 (a) FISCAL YEAR 2003.—

19 (1) IN GENERAL.—There are authorized to be
20 appropriated to the Foundation \$5,536,390,000 for
21 fiscal year 2003.

22 (2) SPECIFIC ALLOCATIONS.—Of the amount
23 authorized under paragraph (1)—

24 (A) \$4,155,690,000 shall be made avail-
25 able to carry out research and related activities,

1 of which \$704,000,000 shall be for information
2 technology research described in paragraph (1)
3 of section 8 and \$301,000,000 shall be for
4 nanoscale science and engineering described in
5 paragraph (2) of section 8;

6 (B) \$1,006,250,000 shall be made avail-
7 able for education and human resources, of
8 which—

9 (i) \$200,000,000 shall be for mathe-
10 matics and science education partnerships
11 described in section 9;

12 (ii) \$20,000,000 shall be for the Rob-
13 ert Noyce Scholarship Program described
14 in section 10; and

15 (iii) \$25,000,000 shall be for the
16 science, mathematics, engineering, and
17 technology talent expansion program de-
18 scribed in paragraph (7) of section 8;

19 (C) \$172,050,000 shall be made available
20 for major research equipment and facilities con-
21 struction;

22 (D) \$191,200,000 shall be made available
23 for salaries and expenses;

24 (E) \$3,500,000 shall be made available for
25 the Office of the National Science Board, in-

cluding salaries and compensation for members of the Board and staff appointed under section 4 of the National Science Foundation Act of 1950 (42 U.S.C. 1863), travel and training costs for members of the Board and such staff, general and Board operating expenses, representational expenses for the Board, honorary awards made by the Board, Board reports (other than the report entitled “Science and Engineering Indicators”), and contracts; and

(F) \$7,700,000 shall be made available for the Office of Inspector General.

(b) FISCAL YEAR 2004.—

(1) IN GENERAL.—There are authorized to be appropriated to the Foundation \$6,390,832,000 for fiscal year 2004.

(2) SPECIFIC ALLOCATIONS.—Of the amount authorized under paragraph (1)—

(A) \$4,799,822,000 shall be made available to carry out research and related activities, of which \$774,000,000 shall be for information technology research described in paragraph (1) of section 8 and \$350,000,000 shall be for nanoscale science and engineering described in paragraph (2) of section 8;

1 (B) \$1,157,188,000 shall be made avail-
2 able for education and human resources, of
3 which—

4 (i) \$300,000,000 shall be for mathe-
5 matics and science education partnerships
6 described in section 9;

7 (ii) \$20,000,000 shall be for the Rob-
8 ert Noyce Scholarship Program described
9 in section 10; and

10 (iii) \$30,000,000 shall be for the
11 science, mathematics, engineering, and
12 technology talent expansion program de-
13 scribed in paragraph (7) of section 8;

14 (C) \$211,182,000 shall be made available
15 for major research equipment and facilities con-
16 struction;

17 (D) \$210,320,000 shall be made available
18 for salaries and expenses;

19 (E) \$3,850,000 shall be made available for
20 the Office of the National Science Board for the
21 purposes described in subsection (a)(2)(E); and

22 (F) \$8,470,000 shall be made available for
23 the Office of Inspector General.

24 (c) FISCAL YEAR 2005.—

1 (1) IN GENERAL.—There are authorized to be
2 appropriated to the Foundation \$7,378,343,000 for
3 fiscal year 2005.

4 (2) SPECIFIC ALLOCATIONS.—Of the amount
5 authorized under paragraph (1)—

6 (A) \$5,543,794,000 shall be made avail-
7 able to carry out research and related activities;

8 (B) \$1,330,766,000 shall be made avail-
9 able to carry out education and human re-
10 sources, of which—

11 (i) \$400,000,000 shall be for mathe-
12 matics and science education partnerships
13 described in section 9;

14 (ii) \$20,000,000 shall be for the Rob-
15 ert Noyce Scholarship Program described
16 in section 10; and

17 (iii) \$35,000,000 shall be for the
18 science, mathematics, engineering, and
19 technology talent expansion program de-
20 scribed in paragraph (7) of section 8;

21 (C) \$258,879,000 shall be made available
22 for major research equipment and facilities con-
23 struction;

24 (D) \$231,337,000 shall be made available
25 for salaries and expenses;

1 (E) \$4,250,000 shall be made available for
2 the Office of the National Science Board for the
3 purposes described in subsection (a)(2)(E); and

4 (F) \$9,317,000 shall be made available for
5 the Office of Inspector General.

6 (d) FISCAL YEAR 2006.—There are authorized to be
7 appropriated to the Foundation \$8,519,776,000 for fiscal
8 year 2006.

9 (e) FISCAL YEAR 2007.—There are authorized to be
10 appropriated to the Foundation \$9,839,262,000 for fiscal
11 year 2007.

12 (f) CONTINGENT AUTHORIZATION.—

13 (1) IN GENERAL.—Funds are authorized to be
14 appropriated under subsections (d) and (e), contin-
15 gent on a determination by Congress that the Foun-
16 dation has made successful progress toward meeting
17 management goals consisting of—

18 (A) strategic management of human cap-
19 ital;

20 (B) competitive sourcing;

21 (C) improved financial performance;

22 (D) expanded electronic government; and

23 (E) budget and performance integration.

24 (2) CONSIDERATION.—In making that deter-
25 mination, Congress shall take into consideration

1 whether or not the Director of the Office of Manage-
2 ment and Budget has certified that the Foundation
3 has, overall, made successful progress toward meet-
4 ing those goals.

5 **SEC. 6. OBLIGATION OF MAJOR RESEARCH EQUIPMENT**
6 **AND FACILITIES CONSTRUCTION FUNDS.**

7 (a) FISCAL YEAR 2003.—None of the funds author-
8 ized under section 5(a)(2)(C) may be obligated until 30
9 days after the first report required under section 14(a)(2)
10 is transmitted to the Congress.

11 (b) FISCAL YEAR 2004.—None of the funds author-
12 ized under section 5(b)(2)(C) may be obligated until 30
13 days after the report required by June 15, 2003, under
14 section 14(a)(2) is transmitted to the Congress.

15 (c) FISCAL YEAR 2005.—None of the funds author-
16 ized under section 5(c)(2)(C) may be obligated until 30
17 days after the report required by June 15, 2004, under
18 section 14(a)(2) is transmitted to the Congress.

19 (d) FISCAL YEAR 2006.—None of the funds author-
20 ized under section 5(d) may be obligated for major re-
21 search equipment and facilities construction until 30 days
22 after the report required by June 15, 2005, under section
23 14(a)(2) is transmitted to the Congress.

24 (e) FISCAL YEAR 2007.—None of the funds author-
25 ized under section 5(e) may be obligated for major re-

1 search equipment and facilities construction until 30 days
2 after the report required by June 15, 2006, under section
3 14(a)(2) is transmitted to the Congress.

4 **SEC. 7. ANNUAL PLAN FOR ALLOCATION OF FUNDING.**

5 Not later than 60 days after the date of enactment
6 of legislation providing for the annual appropriation of
7 funds for the Foundation, the Director shall submit to the
8 Committee on Science and the Committee on Appropria-
9 tions of the House of Representatives, and to the Com-
10 mittee on Commerce, Science, and Transportation, the
11 Committee on Health, Education, Labor, and Pensions,
12 and the Committee on Appropriations of the Senate, a
13 plan for the allocation of funds authorized by this Act for
14 the corresponding fiscal year. The portion of the plan per-
15 taining to Research and Related Activities shall include
16 a description of how the allocation of funding—

17 (1) will affect the average size and duration of
18 research grants supported by the Foundation by
19 field of science, mathematics, and engineering;

20 (2) will affect trends in research support for
21 major fields and subfields of science, mathematics,
22 and engineering, including for emerging multidisci-
23 plinary research areas; and

1 (3) is designed to achieve an appropriate bal-
2 ance among major fields and subfields of science,
3 mathematics, and engineering.

4 **SEC. 8. SPECIFIC PROGRAM AUTHORIZATIONS.**

5 From amounts authorized to be appropriated under
6 section 5, the Director shall carry out the Foundation's
7 research and education programs, including the following
8 initiatives in accordance with this section:

9 (1) INFORMATION TECHNOLOGY.—An informa-
10 tion technology research program to support com-
11 petitive, merit-reviewed proposals for research, edu-
12 cation, and infrastructure support in areas related to
13 cybersecurity, terascale computing systems, soft-
14 ware, networking, scalability, communications, data
15 management, and remote sensing and geospatial in-
16 formation technologies.

17 (2) NANOSCALE SCIENCE AND ENGINEERING.—
18 A nanoscale science and engineering research and
19 education program to support competitive, merit-re-
20 viewed proposals that emphasize—

21 (A) research aimed at discovering novel
22 phenomena, processes, materials, and tools that
23 address grand challenges in materials, elec-
24 tronics, optoelectronics and magnetics, manu-

facturing, the environment, and health care;
and

(B) supporting new research and interdisciplinary centers and networks of excellence, including shared national user facilities, infrastructure, research, and education activities on the societal implications of advances in nanoscale science and engineering.

(3) PLANT GENOME RESEARCH.—(A) A plant genome research program to support competitive, merit-reviewed proposals—

(i) that advance the understanding of the structure, organization, and function of plant genomes; and

(ii) that accelerate the use of new knowledge and innovative technologies toward a more complete understanding of basic biological processes in plants, especially in economically important plants such as corn and soybeans.

(B) Regional plant genome and gene expression research centers to conduct research and dissemination activities that may include—

(i) basic plant genomics research and genomics applications, including those related to cultivation of crops in extreme environments

1 and to cultivation of crops with reduced reliance
2 on fertilizer, herbicides, and pesticides;

3 (ii) basic research that will contribute to
4 the development or use of innovative plant-de-
5 rived products;

6 (iii) basic research on alternative uses for
7 plants and plant materials, including the use of
8 plants as renewable feedstock for alternative en-
9 ergy production and nonpetroleum-based indus-
10 trial chemicals and precursors; and

11 (iv) basic research and dissemination of in-
12 formation on the ecological and other con-
13 sequences of genetically engineered plants.

14 Competitive, merit-based awards for centers under
15 this subparagraph shall be to consortia of institu-
16 tions of higher education or nonprofit organizations.
17 The Director shall, to the extent practicable, ensure
18 that research centers established under this subpara-
19 graph collectively examine as many different agricul-
20 tural environments as possible, enhance the excel-
21 lence of existing Foundation programs, and focus on
22 plants of economic importance.

23 (C) Research partnerships to focus on—

24 (i) basic genomic research on crops grown
25 in the developing world;

1 (ii) basic plant genome research that will
2 advance and expedite the development of im-
3 proved cultivars, including those that are pest-
4 resistant, produce increased yield, reduce the
5 need for fertilizers, herbicides, or pesticides, or
6 have increased tolerance to stress;

7 (iii) basic research that could lead to the
8 development of technologies to produce pharma-
9 ceutical compounds such as vaccines and medi-
10 cations in plants that can be grown in the de-
11 veloping world; and

12 (iv) research on the impact of plant bio-
13 technology on the social, political, economic,
14 health, and environmental conditions in coun-
15 tries in the developing world.

16 Competitive, merit-based awards for partnerships
17 under this subparagraph shall be to institutions of
18 higher education, nonprofit organizations, or con-
19 sortia of such entities that enter into a partnership
20 that shall include one or more research institutions
21 in one or more developing nations, and that may
22 also include for-profit companies involved in plant
23 biotechnology. The Director, by means of outreach,
24 shall encourage inclusion of historically Black col-
25 leges and universities, Hispanic-serving institutions,

1 tribally controlled colleges and universities, Alaska
2 Native-serving institutions, and Native Hawaiian-
3 serving institutions in consortia that enter into such
4 partnerships.

5 (4) INNOVATION PARTNERSHIPS.—An innova-
6 tion partnerships program to support competitive,
7 merit-reviewed proposals that seek to stimulate inno-
8 vation at the regional level through new partnerships
9 involving States, regional governmental entities, local
10 governmental entities, industry, academic institu-
11 tions, and other related organizations in strategically
12 important fields of science and technology.

13 (5) MATHEMATICS AND SCIENCE EDUCATION
14 PARTNERSHIPS.—The mathematics and science edu-
15 cation partnerships program described in section 9.

16 (6) ROBERT NOYCE SCHOLARSHIP PROGRAM.—
17 The Robert Noyce Scholarship Program described in
18 section 10.

19 (7) SCIENCE, MATHEMATICS, ENGINEERING,
20 AND TECHNOLOGY TALENT EXPANSION PROGRAM.—
21 (A) A program of competitive, merit-based, multi-
22 year grants for eligible applicants to increase the
23 number of students studying toward and completing
24 associate's or bachelor's degrees in science, mathe-
25 matics, engineering, and technology, particularly in

1 fields that have faced declining enrollment in recent
2 years.

3 (B) In selecting projects under this paragraph,
4 the Director shall strive to increase the number of
5 students studying toward and completing bacca-
6 laurate degrees, concentrations, or certificates in
7 science, mathematics, engineering, or technology who
8 are individuals identified in section 33 or 34 of the
9 Science and Engineering Equal Opportunities Act
10 (42 U.S.C. 1885a or 1885b).

11 (C) The types of projects the Foundation may
12 support under this paragraph include those that pro-
13 mote high quality—

14 (i) interdisciplinary teaching;

15 (ii) undergraduate-conducted research;

16 (iii) mentor relationships for students;

17 (iv) bridge programs that enable students
18 at community colleges to matriculate directly
19 into baccalaureate science, mathematics, engi-
20 neering, or technology programs;

21 (v) internships carried out in partnership
22 with industry; and

23 (vi) innovative uses of digital technologies,
24 particularly at institutions of higher education

1 that serve high numbers or percentages of eco-
2 nomically disadvantaged students.

3 (D)(i) In order to receive a grant under this
4 paragraph, an eligible applicant shall establish tar-
5 gets to increase the number of students studying to-
6 ward and completing associate's or bachelor's de-
7 grees in science, mathematics, engineering, or tech-
8 nology.

9 (ii) A grant under this paragraph shall be
10 awarded for a period of 5 years, with the final 2
11 years of funding contingent on the Director's deter-
12 mination that satisfactory progress has been made
13 by the grantee toward meeting the targets estab-
14 lished under clause (i).

15 (iii) In the case of community colleges, a stu-
16 dent who transfers to a baccalaureate program, or
17 receives a certificate under an established certificate
18 program, in science, mathematics, engineering, or
19 technology shall be counted toward meeting a target
20 established under clause (i).

21 (E) For each grant awarded under this para-
22 graph to an institution of higher education, at least
23 1 principal investigator shall be in a position of ad-
24 ministrative leadership at the institution of higher
25 education, and at least 1 principal investigator shall

1 be a faculty member from an academic department
2 included in the work of the project. For each grant
3 awarded to a consortium or partnership, at each in-
4 stitution of higher education participating in the
5 consortium or partnership, at least 1 of the individ-
6 uals responsible for carrying out activities authorized
7 under this paragraph at that institution shall be in
8 a position of administrative leadership at the institu-
9 tion, and at least 1 shall be a faculty member from
10 an academic department included in the work of the
11 project at that institution.

12 (F) In this paragraph, the term “eligible appli-
13 cant” means—

- 14 (i) an institution of higher education;
15 (ii) a consortium of institutions of higher
16 education; or
17 (iii) a partnership between—

18 (I) an institution of higher education
19 or a consortium of such institutions; and

20 (II) a nonprofit organization, a State
21 or local government, or a private company,
22 with demonstrated experience and effec-
23 tiveness in science, mathematics, engineer-
24 ing, or technology education.

1 (8) SECONDARY SCHOOL SYSTEMIC INITIA-
2 TIVE.—A program of competitive, merit-based
3 grants for State educational agencies or local edu-
4 cational agencies that supports the planning and im-
5 plementation of agency-wide secondary school reform
6 initiatives designed to promote scientific and techno-
7 logical literacy, meet the mathematics and science
8 education needs of students at risk of not achieving
9 State student academic achievement standards, re-
10 duce the need for basic skill training by employers,
11 and heighten college completion rates through activi-
12 ties, such as—

13 (A) systemic alignment of secondary school
14 curricula and higher education freshman place-
15 ment requirements;

16 (B) development of materials and curricula
17 that support small, theme-oriented schools and
18 learning communities;

19 (C) implementation of enriched mathe-
20 matics and science curricula for all secondary
21 school students;

22 (D) strengthened teacher training in math-
23 ematics, science, and reading as it relates to
24 technical and specialized texts;

1 (E) laboratory improvement and provision
2 of instrumentation as part of a comprehensive
3 program to enhance the quality of mathematics,
4 science, engineering, and technology instruction;
5 or

6 (F) other secondary school systemic initia-
7 tives that enable grantees to leverage private
8 sector funding for mathematics, science, engi-
9 neering, and technology scholarships.

10 In awarding grants under this paragraph, the Direc-
11 tor shall give priority to agencies that serve high
12 poverty communities.

13 (9) EXPERIMENTAL PROGRAM TO STIMULATE
14 COMPETITIVE RESEARCH.—The Experimental Pro-
15 gram to Stimulate Competitive Research, established
16 under section 113 of the National Science Founda-
17 tion Authorization Act of 1988 (42 U.S.C. 1862g),
18 that is designed to enhance—

19 (A) research in mathematics, science, and
20 engineering throughout the States eligible to
21 participate in the program and the Common-
22 wealth of Puerto Rico;

23 (B) research infrastructure in the States
24 eligible to participate in the program and the
25 Commonwealth of Puerto Rico; and

1 (C) the geographic distribution of Federal
2 research and development support.

3 (10) THE SCIENCE AND ENGINEERING EQUAL
4 OPPORTUNITIES ACT.—A comprehensive program
5 designed to advance the goals of the Science and
6 Engineering Equal Opportunities Act (42 U.S.C.
7 1885 et seq.), including programs to—

8 (A) provide support to minority-serving in-
9 stitutions; and

10 (B) ensure that reports required under sec-
11 tions 36 and 37 of such Act are submitted to
12 the—

13 (i) Committee on Science of the
14 House of Representatives;

15 (ii) Committee on Health, Education,
16 Labor, and Pensions of the Senate; and

17 (iii) Committee on Commerce,
18 Science, and Transportation of the Senate.

19 (11) ASTRONOMICAL RESEARCH AND INSTRU-
20 MENTATION.—An astronomical research program to
21 support competitive, merit-reviewed proposals that—

22 (A) will advance understanding of—

23 (i) the origins and characteristics of
24 planets, the Sun, other stars, the Milky
25 Way Galaxy, and extragalactic objects

1 (such as clusters of galaxies and quasars);
 2 and
 3 (ii) the structure and origin of the
 4 universe; and
 5 (B) support related activities such as de-
 6 veloping advanced technologies and instrumen-
 7 tation, funding undergraduate and graduate
 8 students, and satisfying other instrumentation
 9 and research needs.

10 **SEC. 9. MATHEMATICS AND SCIENCE EDUCATION PART-**
 11 **NERSHIPS.**

12 (a) PROGRAM AUTHORIZED.—

13 (1) IN GENERAL.—(A) The Director shall carry
 14 out a program to award grants to institutions of
 15 higher education or eligible nonprofit organizations
 16 (or consortia of such institutions or organizations) to
 17 establish mathematics and science education part-
 18 nership programs to improve elementary and sec-
 19 ondary mathematics and science instruction.

20 (B) Grants shall be awarded under this sub-
 21 section on a competitive, merit-reviewed basis.

22 (2) PARTNERSHIPS.—(A) In order to be eligible
 23 to receive a grant under this subsection, an institu-
 24 tion of higher education or eligible nonprofit organi-
 25 zation (or consortium of such institutions or organi-

1 zations) shall enter into a partnership with one or
2 more local educational agencies that may also in-
3 clude a State educational agency or one or more
4 businesses.

5 (B) A participating institution of higher edu-
6 cation shall include mathematics, science, or engi-
7 neering departments in the programs carried out
8 through a partnership under this paragraph.

9 (3) USES OF FUNDS.—Grants awarded under
10 this subsection shall be used for activities that draw
11 upon the expertise of the partners to improve ele-
12 mentary or secondary education in mathematics or
13 science and that are consistent with State mathe-
14 matics and science student academic achievement
15 standards, including—

16 (A) recruiting and preparing students for
17 careers in elementary or secondary mathematics
18 or science education;

19 (B) offering professional development pro-
20 grams, including summer or academic year in-
21 stitutes or workshops, designed to strengthen
22 the capabilities of mathematics and science
23 teachers;

24 (C) offering innovative preservice and in-
25 service programs that instruct teachers on

1 using technology more effectively in teaching
2 mathematics and science, including programs
3 that recruit and train undergraduate and grad-
4 uate students to provide technical support to
5 teachers;

6 (D) developing distance learning programs
7 for teachers or students, including developing
8 courses, curricular materials, and other re-
9 sources for the in-service professional develop-
10 ment of teachers that are made available to
11 teachers through the Internet;

12 (E) developing a cadre of master teachers
13 who will promote reform and improvement in
14 schools;

15 (F) offering teacher preparation and cer-
16 tification programs for professional mathemati-
17 cians, scientists, and engineers who wish to
18 begin a career in teaching;

19 (G) developing tools to evaluate activities
20 conducted under this subsection;

21 (H) developing or adapting elementary
22 school and secondary school mathematics and
23 science curricular materials that incorporate
24 contemporary research on the science of learn-
25 ing;

1 (I) developing initiatives to increase and
2 sustain the number, quality, and diversity of
3 prekindergarten through grade 12 teachers of
4 mathematics and science, especially in under-
5 served areas;

6 (J) using mathematicians, scientists, and
7 engineers employed by private businesses to
8 help recruit and train mathematics and science
9 teachers;

10 (K) developing and offering mathematics
11 or science enrichment programs for students,
12 including after-school and summer programs;

13 (L) providing research opportunities in
14 business or academia for students and teachers;

15 (M) bringing mathematicians, scientists,
16 and engineers from business and academia into
17 elementary school and secondary school class-
18 rooms; and

19 (N) any other activities the Director deter-
20 mines will accomplish the goals of this sub-
21 section.

22 (4) MASTER TEACHERS.—Activities carried out
23 in accordance with paragraph (3)(E) shall—

24 (A) emphasize the training of master
25 teachers who will improve the instruction of

1 mathematics or science in kindergarten through
2 grade 12;

3 (B) include training in both content and
4 pedagogy; and

5 (C) provide training only to teachers who
6 will be granted sufficient nonclassroom time to
7 serve as master teachers, as demonstrated by
8 assurances their employing school has provided
9 to the Director, in such time and such manner
10 as the Director may require.

11 (5) SCIENCE ENRICHMENT PROGRAMS FOR
12 GIRLS.—Activities carried out in accordance with
13 paragraph (3)(K) and (L) shall include elementary
14 school and secondary school programs to encourage
15 the ongoing interest of girls in science, mathematics,
16 engineering, and technology and to prepare girls to
17 pursue undergraduate and graduate degrees and ca-
18 reers in science, mathematics, engineering, or tech-
19 nology. Funds made available through awards to
20 partnerships for the purposes of this paragraph may
21 support programs for—

22 (A) encouraging girls to pursue studies in
23 science, mathematics, engineering, and tech-
24 nology and to major in such fields in postsec-
25 ondary education;

1 (B) tutoring girls in science, mathematics,
2 engineering, and technology;

3 (C) providing mentors for girls in person
4 and through the Internet to support such girls
5 in pursuing studies in science, mathematics, en-
6 gineering, and technology;

7 (D) educating the parents of girls about
8 the difficulties faced by girls to maintain an in-
9 terest and desire to achieve in science, mathe-
10 matics, engineering, and technology, and enlist-
11 ing the help of parents in overcoming these dif-
12 ficulties; and

13 (E) acquainting girls with careers in
14 science, mathematics, engineering, and tech-
15 nology and encouraging girls to plan for careers
16 in such fields.

17 (6) RESEARCH IN SECONDARY SCHOOLS.—Ac-
18 tivities carried out in accordance with paragraph
19 (3)(K) may include support for research projects
20 performed by students at secondary schools. Uses of
21 funds made available through awards to partner-
22 ships for purposes of this paragraph may include—

23 (A) training secondary school mathematics
24 and science teachers in the design of research
25 projects for students;

1 (B) establishing a system for students and
2 teachers involved in research projects funded
3 under this subsection to exchange information
4 about their projects and research results; and

5 (C) assessing the educational value of the
6 student research projects by such means as
7 tracking the academic performance and choice
8 of academic majors of students conducting re-
9 search.

10 (7) STIPENDS.—Grants awarded under this
11 subsection may be used to provide stipends for
12 teachers or students participating in training or re-
13 search activities that would not be part of their typ-
14 ical classroom activities.

15 (b) SELECTION PROCESS.—

16 (1) APPLICATION.—An institution of higher
17 education or an eligible nonprofit organization (or a
18 consortium of such institutions or organizations)
19 seeking funding under subsection (a) shall submit an
20 application to the Director at such time, in such
21 manner, and containing such information as the Di-
22 rector may require. The application shall include, at
23 a minimum—

1 (A) a description of the partnership and
2 the role that each member will play in imple-
3 menting the proposal;

4 (B) a description of each of the activities
5 to be carried out, including—

6 (i) how such activities will be aligned
7 with State mathematics and science stu-
8 dent academic achievement standards and
9 with other activities that promote student
10 achievement in mathematics and science;

11 (ii) how such activities will be based
12 on a review of relevant research;

13 (iii) why such activities are expected
14 to improve student performance and
15 strengthen the quality of mathematics and
16 science instruction; and

17 (iv) any activities that will encourage
18 the interest of individuals identified in sec-
19 tion 33 or 34 of the Science and Engineer-
20 ing Equal Opportunities Act (42 U.S.C.
21 1885a or 1885b) in mathematics, science,
22 engineering, and technology and will help
23 prepare such individuals to pursue postsec-
24 ondary studies in these fields;

1 (C) a description of the number, size, and
2 nature of any stipends that will be provided to
3 students or teachers and the reasons such sti-
4 pends are needed;

5 (D) a description of how the partnership
6 will serve as a catalyst for reform of mathe-
7 matics and science education programs;

8 (E) a description of how the partnership
9 will assess its success;

10 (F) a description of how the partnership
11 will collaborate with the State educational agen-
12 cy to ensure that successful partnership activi-
13 ties may be replicated throughout the State;
14 and

15 (G) a description of the manner in which
16 the partnership will be continued after assist-
17 ance under this section ends.

18 (2) REVIEW OF APPLICATIONS.—In evaluating
19 the applications submitted under paragraph (1), the
20 Director shall consider, at a minimum—

21 (A) the ability of the partnership to carry
22 out effectively the proposed programs;

23 (B) the extent to which the members of
24 the partnership are committed to making the
25 partnership a central organizational focus;

1 (C) the degree to which activities carried
2 out by the partnership are based on relevant re-
3 search and are likely to result in increased stu-
4 dent achievement;

5 (D) the degree to which such activities are
6 aligned with State mathematics and science stu-
7 dent academic achievement standards;

8 (E) the likelihood that the partnership will
9 demonstrate activities that can be widely imple-
10 mented as part of larger scale reform efforts;
11 and

12 (F) the extent to which the activities will
13 encourage the interest of individuals identified
14 in section 33 or 34 of the Science and Engi-
15 neering Equal Opportunities Act (42 U.S.C.
16 1885a or 1885b) in mathematics, science, engi-
17 neering, and technology and will help prepare
18 such individuals to pursue postsecondary stud-
19 ies in these fields.

20 (3) AWARDS.—In awarding grants under this
21 section, the Director shall—

22 (A) give priority to applications in which
23 the partnership includes a high-need local edu-
24 cational agency or a high-need local educational
25 agency in which at least one school does not

1 make adequate yearly progress, as determined
2 pursuant to part A of title I of the Elementary
3 and Secondary Education Act of 1965 (20
4 U.S.C. 6311 et seq.); and

5 (B) ensure that, to the extent practicable,
6 a substantial number of the partnerships fund-
7 ed under this section include businesses.

8 (c) ACCOUNTABILITY AND DISSEMINATION.—

9 (1) ASSESSMENT REQUIRED.—The Director
10 shall evaluate the program established under sub-
11 section (a). At a minimum, such evaluation shall—

12 (A) use a common set of benchmarks and
13 assessment tools to identify best practices and
14 materials developed and demonstrated by the
15 partnerships; and

16 (B) to the extent practicable, compare the
17 effectiveness of practices and materials devel-
18 oped and demonstrated by the partnerships au-
19 thorized under this section with those of part-
20 nerships funded by other State or Federal agen-
21 cies.

22 (2) DISSEMINATION OF RESULTS.—(A) The re-
23 sults of the evaluation required under paragraph (1)
24 shall be made available to the public and shall be
25 provided to the Committee on Science of the House

1 of Representatives, the Committee on Commerce,
2 Science, and Transportation of the Senate, and the
3 Committee on Health, Education, Labor, and Pen-
4 sions of the Senate.

5 (B) Materials developed under the program es-
6 tablished under subsection (a) that are demonstrated
7 to be effective shall be made widely available to the
8 public.

9 (3) ANNUAL MEETING.—The Director, in con-
10 sultation with the Secretary of Education, shall con-
11 vene an annual meeting of the partnerships partici-
12 pating under this section to foster greater national
13 collaboration.

14 (4) REPORT ON COORDINATION.—The Director,
15 in consultation with the Secretary of Education,
16 shall provide an annual report to the Committee on
17 Science of the House of Representatives, the Com-
18 mittee on Education and the Workforce of the
19 House of Representatives, the Committee on Com-
20 merce, Science, and Transportation of the Senate,
21 and the Committee on Health, Education, Labor,
22 and Pensions of the Senate describing how the pro-
23 gram authorized under this section has been and will
24 be coordinated with the program authorized under
25 part B of title II of the Elementary and Secondary

1 Education Act of 1965 (20 U.S.C. 6601 et seq.).
2 The report under this paragraph shall be submitted
3 along with the President's annual budget request.

4 (5) TECHNICAL ASSISTANCE.—At the request of
5 an eligible partnership or a State educational agen-
6 cy, the Director shall provide the partnership or
7 agency with technical assistance in meeting any re-
8 quirements of this section, including providing advice
9 from experts on how to develop—

10 (A) a quality application for a grant; and

11 (B) quality activities from funds received
12 from a grant under this section.

13 **SEC. 10. ROBERT NOYCE SCHOLARSHIP PROGRAM.**

14 (a) SCHOLARSHIP PROGRAM.—

15 (1) IN GENERAL.—The Director shall carry out
16 a program to award grants to institutions of higher
17 education (or consortia of such institutions) to pro-
18 vide scholarships, stipends, and programming de-
19 signed to recruit and train mathematics and science
20 teachers. Such program shall be known as the
21 “Robert Noyce Scholarship Program”.

22 (2) MERIT REVIEW.—Grants shall be provided
23 under this subsection on a competitive, merit-re-
24 viewed basis.

1 (3) USE OF GRANTS.—Grants provided under
2 this section shall be used by institutions of higher
3 education or consortia—

4 (A) to develop and implement a program
5 to encourage top college juniors and seniors
6 majoring in mathematics, science, and engineer-
7 ing at the grantee’s institution to become math-
8 ematics and science teachers, through—

9 (i) administering scholarships in ac-
10 cordance with subsection (c);

11 (ii) offering programs to help scholar-
12 ship recipients to teach in elementary
13 schools and secondary schools, including
14 programs that will result in teacher certifi-
15 cation or licensing; and

16 (iii) offering programs to scholarship
17 recipients, both before and after they re-
18 ceive their baccalaureate degree, to enable
19 the recipients to become better mathe-
20 matics and science teachers, to fulfill the
21 service requirements of this section, and to
22 exchange ideas with others in their fields;
23 or

24 (B) to develop and implement a program
25 to encourage science, mathematics, or engineer-

1 ing professionals to become mathematics and
2 science teachers, through—

3 (i) administering stipends in accord-
4 ance with subsection (d);

5 (ii) offering programs to help stipend
6 recipients obtain teacher certification or li-
7 censing; and

8 (iii) offering programs to stipend re-
9 cipients, both during and after matricula-
10 tion in the program for which the stipend
11 is received, to enable recipients to become
12 better mathematics and science teachers,
13 to fulfill the service requirements of this
14 section, and to exchange ideas with others
15 in their fields.

16 (b) SELECTION PROCESS.—

17 (1) APPLICATION.—An institution of higher
18 education or consortium seeking funding under this
19 section shall submit an application to the Director at
20 such time, in such manner, and containing such in-
21 formation as the Director may require. The applica-
22 tion shall include, at a minimum—

23 (A) a description of the scholarship or sti-
24 pend program that the applicant intends to op-
25 erate, including the number of scholarships or

1 the size and number of stipends the applicant
2 intends to award, and the selection process that
3 will be used in awarding the scholarships or sti-
4 pends;

5 (B) evidence that the applicant has the ca-
6 pability to administer the scholarship or stipend
7 program in accordance with the provisions of
8 this section; and

9 (C) a description of the programming that
10 will be offered to scholarship or stipend recipi-
11 ents during and after their matriculation in the
12 program for which the scholarship or stipend is
13 received.

14 (2) REVIEW OF APPLICATIONS.—In evaluating
15 the applications submitted under paragraph (1), the
16 Director shall consider, at a minimum—

17 (A) the ability of the applicant to effec-
18 tively carry out the program;

19 (B) the extent to which the applicant is
20 committed to making the program a central or-
21 ganizational focus;

22 (C) the degree to which the proposed pro-
23 gramming will enable scholarship or stipend re-
24 cipients to become successful mathematics and
25 science teachers;

1 (D) the number and quality of the stu-
2 dents that will be served by the program; and

3 (E) the ability of the applicant to recruit
4 students who would otherwise not pursue a ca-
5 reer in teaching.

6 (c) SCHOLARSHIP REQUIREMENTS.—

7 (1) IN GENERAL.—Scholarships under this sec-
8 tion shall be available only to students who are—

9 (A) majoring in science, mathematics, or
10 engineering; and

11 (B) in the last 2 years of a baccalaureate
12 degree program.

13 (2) SELECTION.—Individuals shall be selected
14 to receive scholarships primarily on the basis of aca-
15 demic merit, with consideration given to financial
16 need and to the goal of promoting the participation
17 of individuals identified in section 33 or 34 of the
18 Science and Engineering Equal Opportunities Act
19 (42 U.S.C. 1885a or 1885b).

20 (3) AMOUNT.—The Director shall establish for
21 each year the amount to be awarded for scholarships
22 under this section for that year, which shall be not
23 less than \$7,500 per year, except that no individual
24 shall receive for any year more than the cost of at-
25 tendance at that individual's institution. Individuals

1 may receive a maximum of 2 years of scholarship
2 support.

3 (4) SERVICE OBLIGATION.—If an individual re-
4 ceives a scholarship, that individual shall be required
5 to complete, within 6 years after graduation from
6 the baccalaureate degree program for which the
7 scholarship was awarded, 2 years of service as a
8 mathematics or science teacher for each year a
9 scholarship was received. Service required under this
10 paragraph shall be performed in a high-need local
11 educational agency.

12 (d) STIPENDS.—

13 (1) IN GENERAL.—Stipends under this section
14 shall be available only to mathematics, science, and
15 engineering professionals who, while receiving the
16 stipend, are enrolled in a program to receive certifi-
17 cation or licensing to teach.

18 (2) SELECTION.—Individuals shall be selected
19 to receive stipends under this section primarily on
20 the basis of academic merit, with consideration given
21 to financial need and to the goal of promoting the
22 participation of individuals identified in section 33
23 or 34 of the Science and Engineering Equal Oppor-
24 tunities Act (42 U.S.C. 1885a or 1885b).

1 (3) DURATION.—Individuals may receive a
2 maximum of 1 year of stipend support.

3 (4) SERVICE OBLIGATION.—If an individual re-
4 ceives a stipend under this section, that individual
5 shall be required to complete, within 6 years after
6 graduation from the program for which the stipend
7 was awarded, 2 years of service as a mathematics or
8 science teacher for each year a stipend was received.
9 Service required under this paragraph shall be per-
10 formed in a high-need local educational agency.

11 (e) CONDITIONS OF SUPPORT.—As a condition of ac-
12 ceptance of a scholarship or stipend under this section,
13 a recipient shall enter into an agreement with the institu-
14 tion of higher education—

15 (1) accepting the terms of the scholarship or
16 stipend pursuant to subsections (c) and (g), or sub-
17 section (d);

18 (2) agreeing to provide the awarding institution
19 of higher education with annual certification of em-
20 ployment and up-to-date contact information and to
21 participate in surveys provided by the institution of
22 higher education as part of an ongoing assessment
23 program; and

24 (3) establishing that any scholarship recipient
25 shall be liable to the United States for any amount

1 that is required to be repaid in accordance with the
2 provisions of subsection (g).

3 (f) COLLECTION FOR NONCOMPLIANCE.—

4 (1) MONITORING COMPLIANCE.—An institution
5 of higher education (or consortium thereof) receiving
6 a grant under this section shall, as a condition of
7 participating in the program, enter into an agree-
8 ment with the Director to monitor the compliance of
9 scholarship and stipend recipients with their respec-
10 tive service requirements.

11 (2) COLLECTION OF REPAYMENT.—(A) In the
12 event that a scholarship recipient is required to
13 repay the scholarship under subsection (g), the insti-
14 tution shall be responsible for collecting the repay-
15 ment amounts.

16 (B) Except as provided in subparagraph (C),
17 any such repayment shall be returned to the Treas-
18 ury of the United States.

19 (C) A grantee may retain a percentage of any
20 repayment it collects to defray administrative costs
21 associated with the collection. The Director shall es-
22 tablish a single, fixed percentage that will apply to
23 all grantees.

24 (g) FAILURE TO COMPLETE SERVICE OBLIGA-
25 TION.—

1 (1) GENERAL RULE.—If an individual who has
2 received a scholarship under this section—

3 (A) fails to maintain an acceptable level of
4 academic standing in the educational institution
5 in which the individual is enrolled, as deter-
6 mined by the Director;

7 (B) is dismissed from such educational in-
8 stitution for disciplinary reasons;

9 (C) withdraws from the baccalaureate de-
10 gree program for which the award was made
11 before the completion of such program;

12 (D) declares that the individual does not
13 intend to fulfill the service obligation under this
14 section; or

15 (E) fails to fulfill the service obligation of
16 the individual under this section,

17 such individual shall be liable to the United States
18 as provided in paragraph (2).

19 (2) AMOUNT OF REPAYMENT.—(A) If a cir-
20 cumstance described in paragraph (1) occurs before
21 the completion of one year of a service obligation
22 under this section, the United States shall be enti-
23 tled to recover from the individual, within one year
24 after the date of the occurrence of such cir-
25 cumstance, an amount equal to—

1 (i) the total amount of awards received by
2 such individual under this section; plus

3 (ii) the interest on the amounts of such
4 awards which would be payable if at the time
5 the awards were received they were loans bear-
6 ing interest at the maximum legal prevailing
7 rate, as determined by the Treasurer of the
8 United States,
9 multiplied by 2.

10 (B) If a circumstance described in paragraph
11 (1)(D) or (E) occurs after the completion of one
12 year of a service obligation under this section, the
13 United States shall be entitled to recover from the
14 individual, within one year after the date of the oc-
15 currence of such circumstance, an amount equal to
16 the total amount of awards received by such indi-
17 vidual under this section minus $\frac{1}{2}$ of the amount of
18 the award received per year for each full year of
19 service completed, plus the interest on such amounts
20 which would be payable if at the time the amounts
21 were received they were loans bearing interest at the
22 maximum legal prevailing rate, as determined by the
23 Treasurer of the United States.

24 (3) EXCEPTIONS.—The Director may provide
25 for the partial or total waiver or suspension of any

1 service or payment obligation by an individual under
2 this section whenever compliance by the individual
3 with the obligation is impossible or would involve ex-
4 treme hardship to the individual, or if enforcement
5 of such obligation with respect to the individual
6 would be unconscionable.

7 (h) DATA COLLECTION.—Institutions or consortia re-
8 ceiving grants under this section shall supply to the Direc-
9 tor any relevant statistical and demographic data on schol-
10 arship recipients and stipend recipients the Director may
11 request, including information on employment required by
12 subsection (e).

13 (i) DEFINITIONS.—In this section—

14 (1) the term “cost of attendance” has the
15 meaning given such term in section 472 of the High-
16 er Education Act of 1965 (20 U.S.C. 1087ll);

17 (2) the term “mathematics and science teacher”
18 means a mathematics, science, or technology teacher
19 at the elementary school or secondary school level;

20 (3) the term “mathematics, science, or engi-
21 neering professional” means a person who holds a
22 baccalaureate, masters, or doctoral degree in science,
23 mathematics, or engineering and is working in that
24 field or a related area;

1 (4) the term “scholarship” means an award
2 under subsection (c); and

3 (5) the term “stipend” means an award under
4 subsection (d).

5 **SEC. 11. ESTABLISHMENT OF CENTERS FOR RESEARCH ON**
6 **MATHEMATICS AND SCIENCE LEARNING AND**
7 **EDUCATION IMPROVEMENT.**

8 (a) ESTABLISHMENT.—

9 (1) IN GENERAL.—(A) The Director shall
10 award grants to institutions of higher education (or
11 consortia thereof) to establish multidisciplinary Cen-
12 ters for Research on Learning and Education Im-
13 provement.

14 (B) Grants shall be awarded under this para-
15 graph on a competitive, merit-reviewed basis.

16 (2) PURPOSE.—The purpose of the Centers
17 shall be to conduct and evaluate research in cog-
18 nitive science, education, and related fields and to
19 develop ways in which the results of such research
20 can be applied in elementary school and secondary
21 school classrooms to improve the teaching of mathe-
22 matics and science.

23 (3) FOCUS.—(A) Each Center shall be focused
24 on a different challenge faced by elementary school
25 or secondary school teachers of mathematics and

1 science. In determining the research focus of the
2 Centers, the Director shall consult with the National
3 Academy of Sciences and the Secretary of Education
4 and take into account the extent to which other Fed-
5 eral programs support research on similar questions.

6 (B) The proposal solicitation issued by the Di-
7 rector shall state the focus of each Center and appli-
8 cants shall apply for designation as a specific Cen-
9 ter.

10 (C) At least one Center shall focus on devel-
11 oping ways in which the results of research described
12 in paragraph (2) can be applied, duplicated, and
13 scaled up for use in low-performing elementary
14 schools and secondary schools to improve the teach-
15 ing and student achievement levels in mathematics
16 and science.

17 (D) To the extent practicable and relevant to
18 its focus, every Center shall include, as part of its
19 research, work designed to quantitatively assess and
20 improve the ways that information technology is
21 used in the teaching of mathematics and science.

22 (b) SELECTION PROCESS.—

23 (1) APPLICATION.—An institution of higher
24 education (or a consortium of such institutions)
25 seeking funding under this section shall submit an

1 application to the Director at such time, in such
2 manner, and containing such information as the Di-
3 rector may require. The application shall include, at
4 a minimum, a description of—

5 (A) the initial research projects that will be
6 undertaken by the Center and the process by
7 which new projects will be identified;

8 (B) how the Center will work with other
9 research institutions and schools to broaden the
10 national research agenda on learning and teach-
11 ing;

12 (C) how the Center will promote active col-
13 laboration among physical, biological, and social
14 science researchers;

15 (D) how the Center will promote active
16 participation by elementary and secondary
17 mathematics and science teachers and adminis-
18 trators; and

19 (E) how the results of the Center's re-
20 search can be incorporated into educational
21 practices, and how the Center will assess the
22 success of those practices.

23 (2) REVIEW OF APPLICATIONS.—In evaluating
24 the applications submitted under paragraph (1), the
25 Director shall consider, at a minimum—

1 (A) the ability of the applicant to effec-
2 tively carry out the research program, including
3 the activities described in paragraph (1)(E);

4 (B) the experience of the applicant in con-
5 ducting research on the science of teaching and
6 learning and the capacity of the applicant to
7 foster new multidisciplinary collaborations;

8 (C) the capacity of the applicant to attract
9 elementary school and secondary school teach-
10 ers from a diverse array of schools, and with di-
11 verse professional experiences, for participation
12 in Center activities; and

13 (D) the capacity of the applicant to attract
14 and provide adequate support for graduate stu-
15 dents to pursue research at the intersection of
16 educational practice and basic research on
17 human cognition and learning.

18 (3) AWARDS.—The Director shall ensure, to the
19 extent practicable, that the Centers funded under
20 this section conduct research and develop edu-
21 cational practices designed to improve the edu-
22 cational performance of a broad range of students,
23 including individuals identified in section 33 or 34 of
24 the Science and Engineering Equal Opportunities
25 Act (42 U.S.C. 1885a or 1885b).

1 (c) ANNUAL CONFERENCE.—The Director shall con-
2 vene an annual meeting of the Centers to foster collabora-
3 tion among the Centers and to further disseminate the re-
4 sults of the Centers' activities.

5 (d) COORDINATION.—The Director shall coordinate
6 with the Secretary of Education in—

7 (1) disseminating the results of the research
8 conducted pursuant to grants awarded under this
9 section to elementary school teachers and secondary
10 school teachers; and

11 (2) providing programming, guidance, and sup-
12 port to ensure that such teachers—

13 (A) understand the implications of the re-
14 search disseminated under paragraph (1) for
15 classroom practice; and

16 (B) can use the research to improve such
17 teachers' performance in the classroom.

18 **SEC. 12. DUPLICATION OF PROGRAMS.**

19 (a) IN GENERAL.—The Director shall review the edu-
20 cation programs of the Foundation that are in operation
21 as of the date of enactment of this Act to determine
22 whether any of such programs duplicate the programs au-
23 thorized under this Act.

24 (b) IMPLEMENTATION.—As programs authorized
25 under this Act are implemented, the Director shall—

1 (1) terminate any duplicative program being
2 carried out by the Foundation or merge the duplica-
3 tive program into a program authorized under this
4 Act; and

5 (2) not establish any new program that dupli-
6 cates a program that has been implemented pursu-
7 ant to this Act.

8 (c) REPORT.—

9 (1) REVIEW.—The Director of the Office of
10 Science and Technology Policy shall review the edu-
11 cation programs of the Foundation to ensure compli-
12 ance with the provisions of this section.

13 (2) SUBMISSION.—Not later than 1 year after
14 the date of enactment of this Act, and annually
15 thereafter as part of the annual Office of Science
16 and Technology Policy’s budget submission to Con-
17 gress, the Director of the Office of Science and
18 Technology Policy shall complete a report on the re-
19 view carried out under this subsection and shall sub-
20 mit the report to the Committee on Science and the
21 Committee on Appropriations of the House of Rep-
22 resentatives, and to the Committee on Commerce,
23 Science, and Transportation, the Committee on
24 Health, Education, Labor, and Pensions, and the
25 Committee on Appropriations of the Senate.

1 **SEC. 13. MAJOR RESEARCH INSTRUMENTATION.**

2 (a) REVIEW AND ASSESSMENT.—The Director shall
3 conduct a review and assessment of the major research
4 instrumentation program and, not later than 1 year after
5 the date of enactment of this Act, submit a report of find-
6 ings and recommendations to the Committee on Science
7 of the House of Representatives, the Committee on Com-
8 merce, Science, and Transportation of the Senate, and the
9 Committee on Health, Education, Labor, and Pensions of
10 the Senate. The report shall include—

11 (1) estimates of the needs, by major field of
12 science and engineering and by types of institutions
13 of higher education, for the types of research instru-
14 mentation that are eligible for acquisition under the
15 guidelines of the major research instrumentation
16 program;

17 (2) a description of the distribution of awards
18 and funding levels by year, by major field of science
19 and engineering, and by type of institution of higher
20 education for the program, since the inception of the
21 major research instrumentation program; and

22 (3) an analysis of the impact of the major re-
23 search instrumentation program on the research in-
24 strumentation needs that were documented in the
25 Foundation's 1994 survey of academic research in-
26 strumentation needs.

1 (b) NATIONAL ACADEMY OF SCIENCES ASSESSMENT
2 ON INTERDISCIPLINARY RESEARCH AND ADVANCED IN-
3 STRUMENTATION CENTERS.—

4 (1) ASSESSMENT.—Not later than 3 months
5 after the date of enactment of this Act, the Director
6 shall enter into an arrangement with the National
7 Academy of Sciences to assess the need for an inter-
8 agency program to establish and support fully
9 equipped, state-of-the-art university-based centers
10 for interdisciplinary research and advanced instru-
11 mentation development.

12 (2) TRANSMITTAL TO CONGRESS.—Not later
13 than 15 months after the date of the enactment of
14 this Act, the Director shall transmit to the Com-
15 mittee on Science of the House of Representatives,
16 the Committee on Commerce, Science, and Trans-
17 portation of the Senate, and the Committee on
18 Health, Education, Labor, and Pensions of the Sen-
19 ate the assessment conducted by the National Acad-
20 emy of Sciences together with the Foundation's re-
21 action to the assessment authorized under para-
22 graph (1).

1 **SEC. 14. MAJOR RESEARCH EQUIPMENT AND FACILITIES**
2 **CONSTRUCTION PLAN.**

3 (a) PRIORITIZATION OF PROPOSED MAJOR RE-
4 SEARCH EQUIPMENT AND FACILITIES CONSTRUCTION.—

5 (1) DEVELOPMENT OF PRIORITIES.—(A) The
6 Director shall—

7 (i) develop a list indicating by number the
8 relative priority for funding under the major re-
9 search equipment and facilities construction ac-
10 count that the Director assigns to each project
11 the Board has approved for inclusion in a fu-
12 ture budget request; and

13 (ii) submit the list described in clause (i)
14 to the Board for approval.

15 (B) The Director shall update the list prepared
16 under subparagraph (A) each time the Board ap-
17 proves a new project that would receive funding
18 under the major research equipment and facilities
19 construction account, as necessary to prepare re-
20 ports under paragraph (2), and, from time to time,
21 submit any updated list to the Board for approval.

22 (2) ANNUAL REPORT.—Not later than 90 days
23 after the date of enactment of this Act, and not
24 later than each June 15 thereafter, the Director
25 shall transmit to the Committee on Science of the
26 House of Representatives, the Committee on Com-

merce, Science, and Transportation of the Senate,
and the Committee on Health, Education, Labor,
and Pensions of the Senate a report containing—

(A) the most recent Board-approved priority list developed under paragraph (1)(A);

(B) a description of the criteria used to develop such list; and

(C) a description of the major factors for each project that determined the ranking of such project on the list, based on the application of the criteria described pursuant to subparagraph (B).

(3) CRITERIA.—The criteria described pursuant to paragraph (2)(B) shall include, at a minimum—

(A) scientific merit;

(B) broad societal need and probable impact;

(C) consideration of the results of formal prioritization efforts by the scientific community;

(D) readiness of plans for construction and operation;

(E) the applicant's management and administrative capacity of large research facilities;

1 (F) international and interagency commit-
2 ments; and

3 (G) the order in which projects were ap-
4 proved by the Board for inclusion in a future
5 budget request.

6 (b) FACILITIES PLAN.—

7 (1) IN GENERAL.—Section 201(a)(1) of the Na-
8 tional Science Foundation Authorization Act of 1998
9 (42 U.S.C. 1862l(a)(1)) is amended to read as fol-
10 lows:

11 “(1) IN GENERAL.—The Director shall prepare,
12 and include as part of the Foundation’s annual
13 budget request to Congress, a plan for the proposed
14 construction of, and repair and upgrades to, national
15 research facilities, including full life-cycle cost infor-
16 mation.”.

17 (2) CONTENTS OF PLAN.—Section 201(a)(2) of
18 the National Science Foundation Authorization Act
19 of 1998 (42 U.S.C. 1862l(a)(2)) is amended—

20 (A) in subparagraph (A), by striking
21 “(1);” and inserting “(1), including costs for
22 instrumentation development;”;

23 (B) in subparagraph (B), by striking
24 “and” after the semicolon;

1 (C) in subparagraph (C), by striking
2 “construction.” and inserting “construction;”;
3 and

4 (D) by adding at the end the following:

5 “(D) for each project funded under the
6 major research equipment and facilities con-
7 struction account—

8 “(i) estimates of the total project cost
9 (from planning to commissioning); and

10 “(ii) the source of funds, including
11 Federal funding identified by appropria-
12 tions category and non-Federal funding;

13 “(E) estimates of the full life-cycle cost of
14 each national research facility;

15 “(F) information on any plans to retire na-
16 tional research facilities; and

17 “(G) estimates of funding levels for grants
18 supporting research that will be conducted
19 using each national research facility.”.

20 (3) DEFINITION.—Section 2 of the National
21 Science Foundation Authorization Act of 1998 (42
22 U.S.C. 1862k note) is amended—

23 (A) by redesignating paragraphs (3)
24 through (5) as paragraphs (4) through (6), re-
25 spectively; and

1 (B) by inserting after paragraph (2) the
2 following:

3 “(3) FULL LIFE-CYCLE COST.—The term ‘full
4 life-cycle cost’ means all costs of planning, develop-
5 ment, procurement, construction, operations and
6 support, and shut-down costs, without regard to
7 funding source and without regard to what entity
8 manages the project or facility involved.”.

9 (c) PROJECT MANAGEMENT.—No national research
10 facility project funded under the major research equip-
11 ment and facilities construction account shall be managed
12 by an individual whose appointment to the Foundation is
13 temporary.

14 (d) BOARD APPROVAL OF MAJOR RESEARCH EQUIP-
15 MENT AND FACILITIES PROJECTS.—

16 (1) IN GENERAL.—The Board shall explicitly
17 approve any project to be funded out of the major
18 research equipment and facilities construction ac-
19 count before any funds may be obligated from such
20 account for such project.

21 (2) REPORT.—Not later than September 15 of
22 each fiscal year, the Board shall report to the Com-
23 mittee on Commerce, Science, and Transportation of
24 the Senate, the Committee on Health, Education,
25 Labor, and Pensions of the Senate, and the Com-

1 mittee on Science of the House of Representatives
2 on the conditions of any delegation of authority
3 under section 4 of the National Science Foundation
4 Act of 1950 (42 U.S.C. 1863) that relates to funds
5 appropriated for any project in the major research
6 equipment and facilities construction account.

7 (e) NATIONAL ACADEMY OF SCIENCES STUDY ON
8 MAJOR RESEARCH EQUIPMENT AND FACILITIES CON-
9 STRUCTION.—

10 (1) STUDY.—Not later than 3 months after the
11 date of enactment of this Act, the Director shall
12 enter into an arrangement with the National Acad-
13 emy of Sciences to perform a study on setting prior-
14 ities for a diverse array of disciplinary and inter-
15 disciplinary Foundation-sponsored large research fa-
16 cility projects.

17 (2) TRANSMITTAL TO CONGRESS.—Not later
18 than 15 months after the date of the enactment of
19 this Act, the Director shall transmit to the Com-
20 mittee on Science and the Committee on Appropria-
21 tions of the House of Representatives, and to the
22 Committee on Commerce, Science, and Transpor-
23 tation, the Committee on Health, Education, Labor,
24 and Pensions, and the Committee on Appropriations
25 of the Senate, the study conducted by the National

1 Academy of Sciences together with the Foundation's
2 reaction to the study authorized under paragraph
3 (1).

4 **SEC. 15. ADMINISTRATIVE AMENDMENTS.**

5 (a) BOARD MEETINGS.—

6 (1) IN GENERAL.—Section 4(e) of the National
7 Science Foundation Act of 1950 (42 U.S.C.
8 1863(e)) is amended by striking the second and
9 third sentences and inserting “The Board shall
10 adopt procedures governing the conduct of its meet-
11 ings, including delivery of notice and a definition of
12 a quorum, which in no case shall be less than one-
13 half plus one of the confirmed members of the
14 Board.”.

15 (2) OPEN MEETINGS.—The Board and all of its
16 committees, subcommittees, and task forces (and
17 any other entity consisting of members of the Board
18 and reporting to the Board) shall be subject to sec-
19 tion 552b of title 5, United States Code.

20 (3) COMPLIANCE AUDIT.—The Inspector Gen-
21 eral of the Foundation shall conduct an annual audit
22 of the compliance by the Board with the require-
23 ments described in paragraph (2). The audit shall
24 examine the proposed and actual content of closed
25 meetings and determine whether the closure of the

1 meetings was consistent with section 552b of title 5,
2 United States Code.

3 (4) REPORT.—Not later than February 15 of
4 each year, the Inspector General of the Foundation
5 shall transmit to the Committee on Science of the
6 House of Representatives, the Committee on Com-
7 merce, Science, and Transportation of the Senate,
8 and the Committee on Health, Education, Labor,
9 and Pensions of the Senate the audit required under
10 paragraph (3) along with recommendations for cor-
11 rective actions that need to be taken to achieve fuller
12 compliance with the requirements described in para-
13 graph (2), and recommendations on how to ensure
14 public access to the Board’s deliberations.

15 (b) CONFIDENTIALITY OF CERTAIN INFORMATION.—
16 Section 14(i) of the National Science Foundation Act of
17 1950 (42 U.S.C. 1873(i)) is amended to read as follows:

18 “(i)(1)(A) Information supplied to the Foundation or
19 a contractor of the Foundation in survey forms, question-
20 naires, or similar instruments for purposes of section
21 3(a)(5) or (6) by an individual, an industrial or commer-
22 cial organization, or an educational, academic, or other
23 nonprofit institution when the institution has received a
24 pledge of confidentiality from the Foundation, shall not
25 be disclosed to the public unless the information has been

1 transformed into statistical or abstract formats that do
2 not allow for the identification of the supplier.

3 “(B) Information that has not been transformed into
4 formats described in subparagraph (A) may be used only
5 for statistical or research purposes.

6 “(C) The identities of individuals, organizations, and
7 institutions supplying information described in subpara-
8 graph (A) may not be disclosed to the public.

9 “(2) In support of functions authorized by section
10 3(a)(5) or (6), the Foundation may designate, at its dis-
11 cretion, authorized persons, including employees of Fed-
12 eral, State, or local agencies or instrumentalities
13 (including local educational agencies) and employees of
14 private organizations, to have access, for statistical or re-
15 search purposes only, to information collected pursuant to
16 section 3(a)(5) or (6) that allows for the identification of
17 the supplier. No such person may—

18 “(A) publish information collected pursuant to
19 section 3(a)(5) or (6) in such a manner that either
20 an individual, an industrial or commercial organiza-
21 tion, or an educational, academic, or other nonprofit
22 institution that has received a pledge of confiden-
23 tiality from the Foundation can be specifically iden-
24 tified;

1 “(B) permit anyone other than individuals au-
2 thorized by the Foundation to examine data that al-
3 lows for such identification relating to an individual,
4 an industrial or commercial organization, or an aca-
5 demic, educational, or other nonprofit institution
6 that has received a pledge of confidentiality from the
7 Foundation; or

8 “(C) knowingly and willfully request or obtain
9 any nondisclosable information described in para-
10 graph (1) from the Foundation under false pre-
11 tenses.

12 “(3) Violation of this subsection is punishable by a
13 fine of not more than \$10,000, imprisonment for not more
14 than 5 years, or both.”.

15 (c) APPOINTMENT.—Section 4(g) of the National
16 Science Foundation Act of 1950 (42 U.S.C. 1863(g)) is
17 amended by striking the second sentence and inserting
18 “Such staff shall be appointed by the Chairman and as-
19 signed at the direction of the Board.”.

20 (d) SCHOLARSHIP ELIGIBILITY.—The Director shall
21 not exclude part-time students from eligibility for scholar-
22 ships under the Computer Science, Engineering, and
23 Mathematics Scholarship program.

1 **SEC. 16. SCIENCE AND ENGINEERING EQUAL OPPORTUNI-**
2 **TIES ACT AMENDMENTS.**

3 Section 32 of the Science and Engineering Equal Op-
4 portunities Act (42 U.S.C. 1885) is amended—

5 (1) in subsection (a), by striking
6 “backgrounds.” and inserting “backgrounds, includ-
7 ing persons with disabilities.”; and

8 (2) in subsection (b)—

9 (A) by inserting “, including persons with
10 disabilities,” after “backgrounds”; and

11 (B) by striking “and minorities” each
12 place the term appears and inserting “, minori-
13 ties, and persons with disabilities”.

14 **SEC. 17. UNDERGRADUATE EDUCATION REFORM.**

15 (a) IN GENERAL.—The Director shall award grants,
16 on a competitive, merit-reviewed basis, to institutions of
17 higher education to expand previously implemented re-
18 forms of undergraduate science, mathematics, engineer-
19 ing, or technology education that have been demonstrated
20 to have been successful in increasing the number and qual-
21 ity of students studying toward and completing associate’s
22 or baccalaureate degrees in science, mathematics, engi-
23 neering, or technology.

24 (b) USES OF FUNDS.—Activities supported by grants
25 under this section may include—

1 (1) expansion of successful reform efforts be-
2 yond a single course or group of courses to achieve
3 reform within an entire academic unit;

4 (2) expansion of successful reform efforts be-
5 yond a single academic unit to other science, mathe-
6 matics, engineering, or technology academic units
7 within an institution;

8 (3) creation of multidisciplinary courses or pro-
9 grams that formalize collaborations for the purpose
10 of improved student instruction and research in
11 science, mathematics, engineering, and technology;

12 (4) expansion of undergraduate research oppor-
13 tunities beyond a particular laboratory, course, or
14 academic unit to engage multiple academic units in
15 providing multidisciplinary research opportunities
16 for undergraduate students;

17 (5) expansion of innovative tutoring or men-
18 toring programs proven to enhance student recruit-
19 ment or persistence to degree completion in science,
20 mathematics, engineering, or technology;

21 (6) improvement of undergraduate science,
22 mathematics, engineering, and technology education
23 for nonmajors, including education majors; and

24 (7) implementation of technology-driven reform
25 efforts, including the installation of technology to fa-

1 cilitate such reform, that directly impact under-
2 graduate science, mathematics, engineering, or tech-
3 nology instruction or research experiences.

4 (c) SELECTION PROCESS.—

5 (1) APPLICATIONS.—An institution of higher
6 education seeking a grant under this section shall
7 submit an application to the Director at such time,
8 in such manner, and containing such information as
9 the Director may require. The application shall in-
10 clude, at a minimum—

11 (A) a description of the proposed reform
12 effort;

13 (B) a description of the previously imple-
14 mented reform effort that will serve as the basis
15 for the proposed reform effort and evidence of
16 success of that previous effort, including data
17 on student recruitment, persistence to degree
18 completion, and academic achievement;

19 (C) evidence of active participation in the
20 proposed project by individuals who were cen-
21 tral to the success of the previously imple-
22 mented reform effort; and

23 (D) evidence of institutional support for,
24 and commitment to, the proposed reform effort,
25 including a description of existing or planned

1 institutional policies and practices regarding
2 faculty hiring, promotion, tenure, and teaching
3 assignment that reward faculty contributions to
4 undergraduate education equal to, or greater
5 than, scholarly scientific research.

6 (2) REVIEW OF APPLICATIONS.—In evaluating
7 applications submitted under paragraph (1), the Di-
8 rector shall consider at a minimum—

9 (A) the evidence of past success in imple-
10 menting undergraduate education reform and
11 the likelihood of success in undertaking the pro-
12 posed expanded effort;

13 (B) the extent to which the faculty, staff,
14 and administrators of the institution are com-
15 mitted to making the proposed institutional re-
16 form a priority of the participating academic
17 unit;

18 (C) the degree to which the proposed re-
19 form will contribute to change in institutional
20 culture and policy such that a greater value is
21 placed on faculty engagement in undergraduate
22 education, as evidenced through promotion and
23 tenure policies; and

1 (D) the likelihood that the institution will
2 sustain or expand the reform beyond the period
3 of the grant.

4 (3) GRANT DISTRIBUTION.—The Director shall
5 ensure, to the extent practicable, that grants award-
6 ed under this section are made to a variety of types
7 of institutions of higher education.

8 **SEC. 18. REPORTS.**

9 (a) GRANT SIZE AND DURATION.—Not later than 6
10 months after the date of enactment of this Act, the Direc-
11 tor shall transmit to the Committee on Science of the
12 House of Representatives, the Committee on Commerce,
13 Science, and Transportation of the Senate, and the Com-
14 mittee on Health, Education, Labor, and Pensions of the
15 Senate a report describing the impact that increasing the
16 average grant size and duration would have on minority-
17 serving institutions and on institutions located in States
18 where the Foundation’s Experimental Program to Stimu-
19 late Competitive Research (established under section 113
20 of the National Science Foundation Authorization Act of
21 1988 (42 U.S.C. 1862g)) is carrying out activities.

22 (b) FACULTY.—Not later than 3 months after the
23 date of enactment of this Act, the Director shall enter into
24 an arrangement with the National Academy of Sciences
25 to assess gender differences in the careers of science and

1 engineering faculty. This study shall build on the Acad-
2 emy's work on gender differences in the careers of doc-
3 toral scientists and engineers and examine issues such as
4 faculty hiring, promotion, tenure, and allocation of re-
5 sources including laboratory space. Upon completion, the
6 results of this study shall be transmitted to the Committee
7 on Science of the House of Representatives, the Com-
8 mittee on Commerce, Science, and Transportation of the
9 Senate, and the Committee on Health, Education, Labor,
10 and Pensions of the Senate.

11 (c) GRANT FUNDING.—Not later than 3 months after
12 the date of enactment of this Act, the Director shall enter
13 into an agreement with an appropriate party to assess
14 gender differences in the distribution of external Federal
15 research and development funding. This study shall exam-
16 ine differences in amounts requested and awarded, by gen-
17 der, in major Federal external grant programs. Upon com-
18 pletion, the results of this study shall be transmitted to
19 the Committee on Science of the House of Representa-
20 tives, the Committee on Commerce, Science, and Trans-
21 portation of the Senate, and the Committee on Health,
22 Education, Labor, and Pensions of the Senate.

23 (d) STUDY OF BROADBAND NETWORK ACCESS FOR
24 SCHOOLS AND LIBRARIES.—

1 (1) REPORT TO CONGRESS.—The Director shall
2 conduct a study of the issues described in paragraph
3 (3), and not later than 1 year after the date of the
4 enactment of this Act, transmit to the Committee on
5 Science of the House of Representatives, the Com-
6 mittee on Commerce, Science, and Transportation of
7 the Senate, and the Committee on Health, Edu-
8 cation, Labor, and Pensions of the Senate a report
9 including recommendations to address those issues.
10 Such report shall be updated annually for 4 addi-
11 tional years.

12 (2) CONSULTATION.—In preparing the reports
13 under paragraph (1), the Director shall consult with
14 Federal agencies and educational entities as the Di-
15 rector considers appropriate.

16 (3) ISSUES TO BE ADDRESSED.—The reports
17 shall—

18 (A) identify the availability of high-speed,
19 large bandwidth capacity access to different de-
20 mographic groups served by elementary schools,
21 secondary schools, and libraries in the United
22 States;

23 (B) identify how the provision of high-
24 speed, large bandwidth capacity access to the

1 Internet to such schools and libraries can be ef-
2 fectively utilized within each school and library;

3 (C) consider the effect that specific or re-
4 gional circumstances may have on the ability of
5 such institutions to acquire high-speed, large
6 bandwidth capacity access to achieve universal
7 connectivity as an effective tool in the education
8 process; and

9 (D) include options and recommendations
10 to address the challenges and issues identified
11 in the reports.

12 (e) MINORITY-SERVING INSTITUTION FUNDING.—

13 (1) ANNUAL REPORTING REQUIRED.—The Di-
14 rector shall submit an annual report, along with the
15 President's annual budget request, to the Committee
16 on Science of the House of Representatives, the
17 Committee on Commerce, Science, and Transpor-
18 tation of the Senate, and the Committee on Health,
19 Education, Labor, and Pensions of the Senate on
20 the amount of funding awarded by the Foundation
21 to minority-serving institutions, including funding
22 received as members of consortia. The report shall
23 include information on such funding to minority-
24 serving institutions—

1 (A) expressed as a percentage of funding
 2 to all institutions of higher education for each
 3 appropriations account within the Foundation's
 4 budget; and

5 (B) for the preceding 10 years.

6 (2) REPORT ON WAYS TO IMPROVE FUNDING.—

7 Within one year after the date of enactment of this
 8 Act, the Director shall submit to the Committee on
 9 Science of the House of Representatives, the Com-
 10 mittee on Commerce, Science, and Transportation of
 11 the Senate, and the Committee on Health, Edu-
 12 cation, Labor, and Pensions of the Senate a report
 13 on recommendations on how the Foundation can im-
 14 prove funding to minority-serving institutions.

15 **SEC. 19. EVALUATIONS.**

16 (a) EDUCATION.—

17 (1) IN GENERAL.—The Director, through the
 18 Research, Evaluation and Communication Division
 19 of the Education and Human Resources Directorate
 20 of the Foundation, shall evaluate the effectiveness of
 21 all undergraduate science, mathematics, engineering,
 22 or technology education activities supported by the
 23 Foundation in increasing the number and quality of
 24 students, including individuals identified in section
 25 33 or 34 of the Science and Engineering Equal Op-

1 opportunities Act (42 U.S.C. 1885a or 1885b) study-
2 ing toward and completing associate's or bacca-
3 laureate degrees in science, mathematics, engineer-
4 ing, and technology. In conducting the evaluation,
5 the Director shall consider information on—

6 (A) the number of students enrolled in un-
7 dergraduate science, mathematics, engineering,
8 and technology programs;

9 (B) student academic achievement, includ-
10 ing quantifiable measurements of students'
11 mastery of content and skills;

12 (C) persistence to degree completion, in-
13 cluding students who transfer from science,
14 mathematics, engineering, and technology pro-
15 grams to programs in other academic dis-
16 ciplines; and

17 (D) placement during the first year after
18 degree completion in post-graduate education or
19 career pathways.

20 (2) ASSESSMENT BENCHMARKS AND TOOLS.—

21 The Director, through the Research, Evaluation and
22 Communication Division of the Education and
23 Human Resources Directorate of the Foundation,
24 shall establish a common set of assessment bench-
25 marks and tools, and shall enable every Foundation-

1 sponsored project to incorporate the use of these
2 benchmarks and tools in their project-based assess-
3 ment activities.

4 (3) REPORTS TO CONGRESS.—Not later than 3
5 years after the date of the enactment of this Act,
6 and once every 3 years thereafter, the Director shall
7 transmit to the Committee on Science of the House
8 of Representatives, the Committee on Commerce,
9 Science, and Transportation of the Senate, and the
10 Committee on Health, Education, Labor, and Pen-
11 sions of the Senate a report containing the results
12 of evaluations under paragraph (1).

13 (b) AWARDS.—Notwithstanding any other provision
14 of this Act, the Director shall annually evaluate a random
15 sample of grants, contracts, or other awards made pursu-
16 ant to this Act.

17 (c) DISSEMINATION.—The Director shall—

18 (1) provide for the dissemination of the results
19 of the evaluations conducted pursuant to this section
20 to the public; and

21 (2) provide notice to the public that such eval-
22 uations are available.

1 **SEC. 20. REPORT BY COMMITTEE ON EQUAL OPPORTUNI-**
2 **TIES IN SCIENCE AND ENGINEERING.**

3 As part of the first report required by section 36(e)
4 of the Science and Engineering Equal Opportunities Act
5 (42 U.S.C. 1885c(e)) transmitted to Congress after the
6 date of enactment of this Act, the Committee on Equal
7 Opportunities in Science and Engineering shall include—

8 (1) a summary of its findings over the previous
9 10 years;

10 (2) a description of past and present policies
11 and activities of the Foundation to encourage full
12 participation of women, minorities, and persons with
13 disabilities in science, mathematics, and engineering
14 fields, including activities in support of minority-
15 serving institutions; and

16 (3) an assessment of the trends in participation
17 in Foundation activities, and an assessment of the
18 success of Foundation policies and activities, along
19 with proposals for new strategies or the broadening
20 of existing successful strategies toward facilitating
21 the goals of that Act.

22 **SEC. 21. ADVANCED TECHNOLOGICAL EDUCATION PRO-**
23 **GRAM.**

24 (a) CORE SCIENCE AND MATHEMATICS COURSES.—
25 Section 3(a) of the Scientific and Advanced-Technology
26 Act of 1992 (42 U.S.C. 1862i(a)) is amended—

1 (1) by inserting “, and to improve the quality
2 of their core education courses in science and mathe-
3 matics” after “education in advanced-technology
4 fields”;

5 (2) in paragraph (1) by inserting “and in core
6 science and mathematics courses” after “advanced-
7 technology fields”; and

8 (3) in paragraph (2) by striking “in advanced-
9 technology fields” and inserting “who provide in-
10 struction in science, mathematics, and advanced-
11 technology fields”.

12 (b) ARTICULATION PARTNERSHIPS.—Section
13 3(c)(1)(B) of the Scientific and Advanced-Technology Act
14 of 1992 (42 U.S.C. 1862i(c)(1)(B)) is amended—

15 (1) by striking “and” at the end of clause (i);

16 (2) by striking the period at the end of clause
17 (ii) and inserting a semicolon; and

18 (3) by adding after clause (ii) the following new
19 clauses:

20 “(iii) provide students with research expe-
21 riences at bachelor’s-degree-granting institu-
22 tions participating in the partnership, including
23 stipend support for students participating in
24 summer programs; and

1 “(iv) provide faculty mentors for students
2 participating in activities under clause (iii), in-
3 cluding summer salary support for faculty men-
4 tors.”.

5 (c) NATIONAL SCIENCE FOUNDATION REPORT.—
6 Within 6 months after the date of the enactment of this
7 Act, the Director shall transmit a report to the Committee
8 on Science of the House of Representatives, the Com-
9 mittee on Commerce, Science, and Transportation of the
10 Senate, and the Committee on Health, Education, Labor,
11 and Pensions of the Senate on—

12 (1) efforts by the Foundation and awardees
13 under the program carried out under section 3 of
14 the Scientific and Advanced-Technology Act of 1992
15 (42 U.S.C. 1862i) to disseminate information about
16 the results of projects;

17 (2) the effectiveness of national centers of sci-
18 entific and technical education established under sec-
19 tion 3(b) of the Scientific and Advanced-Technology
20 Act of 1992 (42 U.S.C. 1862i(b)) in serving as na-
21 tional and regional clearinghouses of information
22 and models for best practices in undergraduate
23 science, mathematics, and technology education; and

1 (3) efforts to satisfy the requirement of section
2 3(f)(4) of the Scientific and Advanced-Technology
3 Act of 1992 (42 U.S.C. 1862i(f)(4)).

4 **SEC. 22. REPORT ON FOUNDATION BUDGETARY AND PRO-**
5 **GRAMMATIC EXPANSION.**

6 The Board shall prepare a report to address and ex-
7 amine the Foundation's budgetary and programmatic
8 growth provided for by this Act. The report shall be sub-
9 mitted to the Committee on Science of the House of Rep-
10 resentatives, the Committee on Commerce, Science, and
11 Transportation of the Senate, and the Committee on
12 Health, Education, Labor, and Pensions of the Senate
13 within one year after the date of the enactment of this
14 Act and shall include—

15 (1) recommendations on how the increased
16 funding should be utilized;

17 (2) an examination of the projected impact that
18 the budgetary increases will have on the Nation's
19 scientific and technological workforce;

20 (3) a description of new or expanded programs
21 that will enable institutions of higher education to
22 expand their participation in Foundation-funded ac-
23 tivities;

24 (4) an estimate of the national scientific and
25 technological research infrastructure needed to ade-

1 quately support the Foundation’s increased funding
 2 and additional programs; and

3 (5) a description of the impact the budgetary
 4 increases provided under this Act will have on the
 5 size and duration of grants awarded by the Founda-
 6 tion.

7 **SEC. 23. ASTRONOMY AND ASTROPHYSICS ADVISORY COM-**
 8 **MITTEE.**

9 (a) ESTABLISHMENT.—The Foundation and the Na-
 10 tional Aeronautics and Space Administration shall jointly
 11 establish an Astronomy and Astrophysics Advisory Com-
 12 mittee (in this section referred to as the “Advisory Com-
 13 mittee”).

14 (b) DUTIES.—The Advisory Committee shall—

15 (1) assess, and make recommendations regard-
 16 ing, the coordination of astronomy and astrophysics
 17 programs of the Foundation and the National Aero-
 18 nautics and Space Administration;

19 (2) assess, and make recommendations regard-
 20 ing, the status of the activities of the Foundation
 21 and the National Aeronautics and Space Administra-
 22 tion as they relate to the recommendations contained
 23 in the National Research Council’s 2001 report enti-
 24 tled “Astronomy and Astrophysics in the New Mil-
 25 lennium”, and the recommendations contained in

1 subsequent National Research Council reports of a
2 similar nature; and

3 (3) not later than March 15 of each year,
4 transmit a report to the Director, the Administrator
5 of the National Aeronautics and Space Administra-
6 tion, and the Committee on Science of the House of
7 Representatives, the Committee on Commerce,
8 Science, and Transportation of the Senate, and the
9 Committee on Health, Education, Labor, and Pen-
10 sions of the Senate on the Advisory Committee's
11 findings and recommendations under paragraphs (1)
12 and (2).

13 (c) MEMBERSHIP.—The Advisory Committee shall
14 consist of 13 members, none of whom shall be a Federal
15 employee, including—

16 (1) 5 members selected by the Director;

17 (2) 5 members selected by the Administrator of
18 the National Aeronautics and Space Administration;
19 and

20 (3) 3 members selected by the Director of the
21 Office of Science and Technology Policy.

22 (d) SELECTION PROCESS.—Initial selections under
23 subsection (c) shall be made within 3 months after the
24 date of the enactment of this Act. Vacancies shall be filled
25 in the same manner as provided in subsection (c).

1 (e) CHAIRPERSON.—The Advisory Committee shall
2 select a chairperson from among its members.

3 (f) COORDINATION.—The Advisory Committee shall
4 coordinate with the advisory bodies of other Federal agen-
5 cies, such as the Department of Energy, which may en-
6 gage in related research activities.

7 (g) COMPENSATION.—The members of the Advisory
8 Committee shall serve without compensation, but shall re-
9 ceive travel expenses, including per diem in lieu of subsist-
10 ence, in accordance with sections 5702 and 5703 of title
11 5, United States Code.

12 (h) MEETINGS.—The Advisory Committee shall con-
13 vene, in person or by electronic means, at least 4 times
14 a year.

15 (i) QUORUM.—A majority of the members serving on
16 the Advisory Committee shall constitute a quorum for pur-
17 poses of conducting the business of the Advisory Com-
18 mittee.

19 (j) DURATION.—Section 14 of the Federal Advisory
20 Committee Act shall not apply to the Advisory Committee.

21 **SEC. 24. MINORITY-SERVING INSTITUTIONS UNDER-**
22 **GRADUATE PROGRAM.**

23 (a) IN GENERAL.—The Director is authorized to es-
24 tablish a new program to award grants on a competitive,
25 merit-reviewed basis to Hispanic-serving institutions,

1 Alaska Native-serving institutions, Native Hawaiian-serv-
 2 ing institutions, and other institutions of higher education
 3 serving a substantial number of minority students to en-
 4 hance the quality of undergraduate science, mathematics,
 5 and engineering education at such institutions and to in-
 6 crease the retention and graduation rates of students pur-
 7 suing associate's or baccalaureate degrees in science,
 8 mathematics, engineering, or technology.

9 (b) PROGRAM COMPONENTS.—Grants awarded under
 10 this section shall support—

11 (1) activities to improve courses and curriculum
 12 in science, mathematics, and engineering;

13 (2) faculty development;

14 (3) stipends for undergraduate students partici-
 15 pating in research; and

16 (4) other activities consistent with subsection
 17 (a), as determined by the Director.

18 (c) PROGRAM COORDINATION.—This program shall
 19 be coordinated with and in addition to the ongoing His-
 20 torically Black Colleges and Universities Undergraduate
 21 Program and the Tribal Colleges and Universities Pro-
 22 gram.

23 (d) INSTRUMENTATION.—Funding for instrumenta-
 24 tion is an allowed use of grants awarded under this section
 25 and under the ongoing Historically Black Colleges and

1 Universities Undergraduate Program and the Tribal Col-
2 leges and Universities Program.

3 **SEC. 25. STUDY ON RESEARCH AND DEVELOPMENT FUND-**
4 **ING DATA DISCREPANCIES.**

5 (a) STUDY.—The Director, in consultation with the
6 Director of the Office of Management and Budget and the
7 heads of other Federal agencies, shall enter into agree-
8 ment with the National Academy of Sciences to conduct
9 a comprehensive study to determine the source of discrep-
10 ancies in Federal reports on obligations and actual ex-
11 penditures of Federal research and development funding.

12 (b) CONTENTS.—The study shall—

13 (1) examine the relevance and accuracy of re-
14 porting classifications and definitions used in the re-
15 ports described in subsection (a);

16 (2) examine whether the classifications and
17 definitions are used consistently across Federal
18 agencies for data gathering;

19 (3) examine whether and how Federal agencies
20 use reports described in subsection (a), and describe
21 any other sources of similar data used by those
22 agencies;

23 (4) recommend alternatives for modifications to
24 the current reporting process and system that
25 would—

1 (A) accommodate emerging fields of
2 science and changing practices in the conduct
3 of research and development;

4 (B) minimize, to the extent possible, the
5 burden imposed on the reporters of these data;

6 (C) increase the consistency of application
7 of the system across the Federal agencies in-
8 cluding the Office of Management and Budget
9 and the Foundation;

10 (D) encourage the use of new technologies
11 to increase accuracy, timeliness, and consist-
12 ency of the reported data between the agencies
13 and the research performers; and

14 (E) overcome systemic shortfalls; and

15 (5) recommend an implementation timeline for
16 the modifications recommended under paragraph
17 (4), and recommend specific responsibilities for the
18 program and budget offices in the agencies, taking
19 into consideration required changes to the current
20 computer systems and processes used by the agen-
21 cies.

22 (c) SUBMISSION.—The Director shall submit a report
23 on the results of the study to the Committee on Science
24 of the House of Representatives, the Committee on Com-
25 merce, Science, and Transportation of the Senate, and the

1 Committee on Health, Education, Labor, and Pensions of
2 the Senate within one year after the date of enactment
3 of this Act.

4 (d) IMPLEMENTATION.—Within 6 months after the
5 completion of the study required by subsection (a), the Di-
6 rector of the Office of Science and Technology Policy shall
7 submit to the Committee on Science of the House of Rep-
8 resentatives, the Committee on Commerce, Science, and
9 Transportation of the Senate, and the Committee on
10 Health, Education, Labor, and Pensions of the Senate a
11 plan for implementation of the recommendations of the
12 study.

13 **SEC. 26. PLANNING GRANTS.**

14 The Director is authorized to accept planning pro-
15 posals from applicants who are within .075 percentage
16 points of the current eligibility level for the Experimental
17 Program to Stimulate Competitive Research. Such pro-
18 posals shall be reviewed by the Foundation to determine
19 their merit for support under the Experimental Program
20 to Stimulate Competitive Research or any other appro-
21 priate program.

Amend the title so as to read: “An Act to authorize appropriations for fiscal years 2003, 2004, 2005, 2006, and 2007 for the National Science Foundation, and for other purposes.”.

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